Claims

What is claimed is:

1. A nucleic acid delivery vehicle having at least a tissue tropism for fibroblast-like or macrophage-like cells.

2. A nucleic acid delivery vehicle having at least partially reduced tissue tropism for liver cells.

3. The vehicle of claim 1, wherein said vehicle has at least in part been deprived of at least a tissue tropism for liver cells.

4. The vehicle ~~of any one of claims 1-3~~, wherein said tissue tropism is ~~provided by at~~ least a part of a virus capsid or a functional derivative and/or analogue thereof.

5. The vehicle of claim 4, wherein said capsid comprises proteins, or functional parts, derivatives and/or analogues thereof, from at least two different viruses.

6. The vehicle of claim 5, wherein at least one of said viruses is an adenovirus.

7. The vehicle of claim 5 or claim 6, wherein at least one of said viruses is an ~~adenovirus~~ of subgroup B.

8. A vehicle ~~according~~ to any one of claims 5-7, wherein at least one of said proteins comprises a tissue tropism determining part of a fiber protein derived from a subgroup B adenovirus.

9. A vehicle according to claim 7 or claim 8, wherein said subgroup B adenovirus is adenovirus 16.

10. A vehicle according to any one of claims 7 through 9, further comprising at least one protein derived from an adenovirus not belonging to subgroup B, or a functional part, derivative and/or analogue thereof.

11. The vehicle of claim 10, wherein a protein or a functional part, derivative and/or analogue thereof not derived from an adenovirus of subgroup B is derived from an adenovirus of subgroup C.

12. A vehicle according to anyone of the claims 1-11 comprising nucleic acid derived from an adenovirus.

13. A vehicle according to anyone of the claims 1-12, comprising nucleic acid derived from at least two different adenoviruses.

14. A vehicle according to claim 12 or claim 13, wherein said nucleic acid at least encodes a fiber protein comprising at least a tissue tropism determining part of a subgroup B adenovirus fiber protein, in particular of a serotype 11, 16, 35 and/or 51, preferably of adenovirus 16 or a functional derivative and/or analogue thereof.

15. A vehicle according anyone of claims 12-14, wherein said adenovirus nucleic acid is a modified nucleic acid such that the capacity of said adenovirus nucleic acid to replicate in a target cell has been reduced or disabled, preferably through a deletion of at least part of the E1-region.

16. A vehicle according to anyone of the claims 12-15, wherein said adenovirus nucleic acid is a modified nucleic acid such that the capacity of a host immune system to mount an immune response against adenovirus proteins encoded by said adenovirus nucleic acid has been reduced or disabled, preferably through a deletion of E2A and/or at least part of the E4-region.

17. A vehicle according to anyone of claims 1-16, comprising a minimal adenovirus vector or an Ad/AAV chimaeric vector.

18. A vehicle according to anyone of claims 1-17, further comprising at least one nucleic acid of interest.

19. A vehicle according to anyone of claims 1-18, wherein said vehicle is a subgroup B adenovirus capsid comprising at least one nucleic acid of interest.

20. The vehicle of claim 19, wherein said nucleic acid further comprises subgroup B adenovirus nucleic acid.

21. The vehicle of claim 20, wherein said subgroup B adenovirus nucleic acid has been deprived of the capacity to express E1-region encoded proteins.

22. The vehicle of any one of claims 19-21, wherein said subgroup B adenovirus is adenovirus 16.

23. A method for producing a vehicle according to any one of claims 1-22, comprising providing a cell with means for the assembly of said vehicle wherein said means includes a means for the production of an adenovirus fiber protein, wherein said fiber protein comprises at least a tissue tropism determining part of a subgroup B adenovirus, in particular a serotype 11, 16, 35 and/or 51 adenovirus fiber protein or a functional derivative and/or analogue thereof.

24. A cell for producting a vehicle according to any one of claims 1-22, said cell comprising:

means for the assembly of said vehicle wherein said means includes a means for the production of an adenovirus fiber protein, said fiber protein comprising at least a tissue tropism determining part of a subgroup B adenovirus fiber protein.

25. A method of treating a disease in a subject, said disease treatable by transfer of a nucleic acid encoding a therapeutic proteinaceous molecule or RNA to fibroblast-like or macrophage like cells, said method comprising administering the vehicle of according to claim 1 in a pharmaceutically acceptable manner in a pharmaceutically effective amount.

26. The method according to claim 25 wherein the disease is rheumatoid arthritis.

27. A method of delivering nucleic acid to fibroblast-like or macrophage-like cells, said method comprising introducing the vehicle of claim 1 to said fibroblast-like or macrophage-like cells.

28. Construct pBr/Ad.BamRΔFib, comprising adenovirus 5 sequences 21562-31094 and 32794-35938.

29. A construct comprising adenovirus 5 sequences 21562-31094 and 32794-35938, and an adenovirus 16 nucleic acid encoding at least part of a fiber protein of adenovirus 16.

30. A construct comprising:

adenovirus 5 sequences 21562-31094 and 32794-35938;

an adenovirus 16 nucleic acid encoding at least part of a fiber protein of adenovirus 16; and

a unique PacI-site in the proximity of the adenovirus 5 right terminal repeat, in the non-adenovirus sequence backbone of said construct.

31. A construct comprising:

adenovirus 5 sequences 3534-31094 and 32794-35938; and

an adenovirus 16 nucleic acid encoding at least part of a fiber protein of adenovirus 16.

32. A construct comprising adenovirus 5 sequences 3534-22443, 24033-31094 and 32794-35938, and

an adenovirus 16 nucleic acid encoding at least part of a fiber protein of adenovirus 16.

33. A fibroblast-like or macrophage-like cell produced by the process of claim 27.

34. A method for at least in part removing synovium from a joint in an individual, said method comprising:

administering to said individual's joint a nucleic acid delivery vehicle comprising nucleic acid encoding at least herpes simplex virus thymidine kinase or a functional part, derivative and/or analogue thereof; and

administering to said individual ganciclovir or a derivative and/or analogue thereof.